● PRINTER RUSH ●
(PTO ASSISTANCE)

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[RUSH] **MESSAGE:** Please supply missing Serial No. on page 3 of SPEC, line 16.

Thankyou

[XRUSH] **RESPONSE:**

per examiner

INITIALS:

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REV 10/04

added and dropped channels. If the added and dropped channels are a fixed subset, then only the required subset of optical channel transmitters in transmitters 380-1 through 380-N and subset of optical receivers in receivers 390 through 390-N are populated. This is an efficient solution. However, in a dynamic optical communication system, the added and dropped channels can change over time, according to demand. Complete network flexibility necessitates full population of all the optical channel transmitters 380-1 through 380-N and receivers 390-1 through 390-N. This is a very expensive solution, as only a subset of channels will typically be used at any given time, while the others remain idle. Tunable transmitters and receivers cannot be used with the multiplexers and demultiplexers, due to the fixed channel assignment between the input and output ports of such devices. Passive combining and splitting can be used, but the power budget for that solution is impracticable.

SUMMARY OF THE INVENTION

In accordance with the present invention, architectures for implementing an OADM are based upon and use the programmable optical multiplexer/demultiplexer as described in co-pending application Serial No. 09/944800 filed concurrently herewith and assigned to the same assignee as the present application. As described in the aforementioned co-pending application, a programmable optical demultiplexer is arranged to receive a multiplexed optical signal containing a plurality of separate channels, each with an associated wavelength, and independently assign each input optical channel to a desired output port. Likewise, a programmable optical multiplexer is arranged to receive a plurality of separate optical channels, each with an associated wavelength, and combine the different wavelengths into a single multiplexed optical signal that is made available at the multiplexer output port.

The present invention realizes a tunable (reconfigurable) OADM that provides multiple drop ports and multiple add ports by which desired channels can be removed from, or added to, a composite optical signal. The channels added to and dropped from the optical signal can be individual channels (with a single wavelength per channel) and therefore enabled for direct connection to fixed (or tunable) optical transmitters and optical receivers, respectively. Alternatively, the channels added to and dropped from the optical signal can themselves be multiplexed, enabling more advanced